

# Z88 EPROM

MARCH/APRIL

VOL.3 NO.2

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The Z88 Users' Club Magazine

THE CLUB ADDRESSES

All articles for Z88 EPROM and any other correspondence (except Software Library) should be sent to:

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All requests for software from the Club Software Library, (but not special offers), items for inclusion in the Library, and EPROMs for erasure should be sent to:

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ALWAYS include your Membership Number with any correspondence. This is not just to be awkward - now the Club is growing it can be very time-consuming searching the database for a member's number. Your number is printed on the address label of each issue of Z88 EPROM. Please be sure to enclose a stamped-addressed envelope with anything needing a reply.

EDITORIAL

Despite my best intentions here is yet another late issue! This time I intend to dodge the majority of the blame; everything was going according to plan, but when I contacted the printers they told me that they were so busy that their normal print time of 3-4 weeks was going to stretch to 5 or 6 weeks. Back to the drawing board!

## Z88 EPROM - MAR-APR 1989

This time the big news is centred on price changes - as you will see from Newslines CCL have reduced the suggested selling price of the Z88 from £249+VAT to just £199.95+VAT. This is in fact the original price of the Z88, when the machine was sold by mail-order only.

These price changes come after what must have been an unsettling period for CCL. First, in their January sale, Comet reduced the Z88 to £149+VAT, a massive £100 price cut. As I and no doubt many others found when they tried to buy one of these 'bargain' machines, they were very few and far between. It appears that by this time Comet had decided not to stock the Z88, and the idea of the price cut was to shift their service and demo machines. Going through this destocking process in such a dramatic fashion is alright, but in fact the supply of Z88s dried up within perhaps a week or two of the sale starting, leaving many disappointed potential customers.

As if the loss of one of the two 'big' retailers was not enough, in February Dixons decided to discount the Z88 themselves - before the CCL price cut. At the time of writing Dixons are selling the Z88 for £199.95 including VAT, although these too seem to be rather thin on the ground. Are Dixons also destocking the machine? I think we'll just have to wait and see, but personally I wouldn't be amazed if they did. The Z88 is not really a typical Dixons product, being rather specialised and perhaps too much of a niche product.

Is this the end of the Z88 as we know it? Can CCL survive its two biggest retailers pulling out of the market? Let's put this into perspective: While Comet and Dixons were important in the early days of the machine, CCL have now built up a huge network of specialist computer dealers selling the Z88 - some 350 of them nationwide. These dealers have one big advantage over Comet and Dixons - they can afford to learn a little

about the machines they sell, as they only sell computers, not microwaves or personal hi-fi.

The answer to our question must be yes, CCL can survive this loss. Although no one likes to lose customers, there are still tremendously large untapped markets in the corporate and educational sectors for the Z88, together with further expansion into specialist dealers.

Make no mistake - the Z88 is here to stay.

#### NEWSLINES

\*\* RAKEWELL have set the date for some future Z88 Training Days. April 22nd will see the third Z88 training day at Friendly Lodge Hotel at Milton Keynes. May 6th sees the second Z88 Follow-up day, and the evening of April 21st is called Steaming-up the Z88 - an introduction to the basic functions of the Z88. Further details from Vic Gerhardi on 0908 366009.

\*\* FIRM PRICES have been set by CCL for the forthcoming Astra satellite receiver. Due to go on sale in April, the basic mono push-button receiver will be £169.95, the mid-range remote model £199.95, and the top of the range stereo remote control model will cost £259.95. This model will now include a six watts-per-channel stereo amplifier, which means all you need to add for stereo sound is a pair of loudspeakers. All models have capability to tune up to 99 channels, and are fitted with a SCART socket for direct video and audio connections, as well as the standard RF aerial sockets. The top model seems very good value compared to the Amstrad model, which has no amplifier built in, and will only tune up to 16 channels. (The article comparing Astra with BSB mentioned last issue has been held over due to lack of space.)

\*\* M-TEC have finally released the BASIC manual for the Z88. With the snappy title of "The BBCBASIC(Z80) Reference Manual for the Z88" the book is a hefty 400-odd pages, which has to make it good value at £14.50 + £2 post and packing. Available from M-TEC Computer Services, Market Place, Reepham, Norfolk NR10 4JJ. Telephone 0603 870620.

\*\* CAMBRIDGE COMPUTER have reduced the price of the Z88. The basic Z88 is now £199.95+VAT. The special all in one pack, with 128k RAM, carry case and mains adapter is now £249.95+VAT. A new pack, called the MacLite, has all this plus the MacLink software and lead for £299.95+VAT.

MEMBERS' LETTERS

Dr Michael R Finch (1040)  
3 The Common, Evington, Leicester LE5 6EA

Dear Sir

Can you or any reader of Z88 EPROM please help me with this problem:

I am trying to write an EXECUTE/CLI file which will link my Z88 to Prestel (using the 1200P modem and Wordmongers COMM88 software) and then access and save several pre-chosen Prestel pages, and finally disconnect when finished. Hopefully this could be done automatically using the ALARM facility.

However, I can get no further than the modem dialling out. I have experimented with various .D delay settings, but it seems as if the subsequent keys inputted from the CLI to access the Prestel pages interfere with COMM88's ability to accept the carrier signal from the modem, and the Z88 will not log on to Prestel and access pages as it should.

If this problem is overcome, a further problem is how to refine the EXECUTE file so that it can take care of a situation when the first dialling is unsuccessful, for example if Prestel is engaged, or the line has a disturbance.

Any ideas on the above will be very gratefully received.

### CLI files

by Michael W. Hey (0703)

Have you considered re-inventing the wheel recently? This is probably what you are doing if you write CLI routines. One of the Z88's powerful features is the ability to automate oft-used key sequences, and thus save much repetitive typing. This subject is covered in less than four pages in the User Guide, leaving individual users to discover the full potential of this feature for themselves.

Therefore it would seem to be a good idea to compile a collection of members' CLI files, on the principle that whatever you are attempting to do, someone else has probably done it before, or (if you are a genuine pioneer) someone will be trying to do what you have already achieved. If you have written a routine of which you feel proud please send it to me at: 18, WOODSIDE ROAD, SANDIACRE, NOTTINGHAM. NG10 5GP. Anything will be welcome - long, short, complex or of classic simplicity.

These routines are usually quite short, so it would probably be best to submit them on paper rather than EPROM (saves money on return postage, etc.). Please include clear notes to explain what your routine does! If there is enough interest I shall produce a library of CLI files, either to be printed in Z88 Eprom or available separately as a printed bulletin or on EPROM.

Over to you, folks!

Directories on the Z88

by Geoff Cooper (Cambridge Computer Ltd.)

I have been a technical advisor at CCL now for some 10 months and am pleased that Roy has asked me to contribute a page or two for each edition on a particular subject. Please let Roy or myself know if there is any area you would like covered in future issues.

---

You may find that if you have a large number of files in your machine's memory then managing these files becomes difficult. What you need is a way to 'file' these files into categories, as you might file documents in a filing cabinet by type. These categories are catered for by directories on such operating systems as MS-DOS, UNIX, and that of the Z88.

Suppose we intend to hold files of various types in the Z88 - letters, and a collection of programs for example. We might create in our Z88 memory a directory called "LETTERS" and another called "PROGRAMS". This is done with "CREATE DIRECTORY" in the filer.

Let's create a simple directory structure. Enter the FILER application  F. Select "CREATE DIRECTORY". Type in a suitable directory name, for example "LETTERS".

After you have pressed <ENTER> you will see your directory shown in upper-case. We can enter this directory in two ways :-

Firstly you can use "SELECT DIRECTORY". Simply enter the name of this directory, LETTERS. Alternatively, highlight the word LETTERS with the cursor control key. Hold down <SHIFT> and tap the down-cursor key.

You are now in the directory "LETTERS". We do not yet have anything in the directory.

Press <INDEX>. Now select Pipedream from the applications list in order to start a new Pipedream. Type in some text:-

Dear Sir,

This letter will be filed in the directory "LETTERS".

Regards

A N Other

and then save it with <F>S.

When asked for the filename to save to, reply with :-

:RAM.n/directory name/file name

where n is the device number 0, 1, 2, or 3.

for example :-

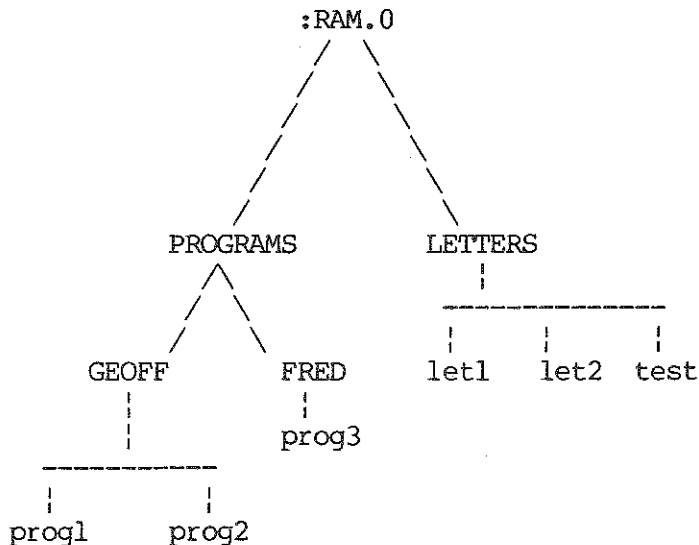
:RAM.0/LETTERS/TEST

The device name is not necessary if the device you wish to use is the same as that which is the default device in the panel.

Now type F to return to the filer. If you are not already in directory "LETTERS" then enter this directory as described above. You will see the file "test" shown.



You may create further directories within a directory (sub-directories), and sub-directories within those sub-directories and so on. This creates a directory "tree". I have illustrated the concept below:



I have shown files in lower case.

:RAM.0/LETTERS/test is the PATHNAME of the file "test".

The PATHNAME of prog1 is :-  
:RAM.0/PROGRAMS/GEOFF/prog1

Now try creating a file, prog1, in a subdirectory GEOFF in directory PROGRAMS.

Note that the operating system will not allow you to delete a directory containing any files or sub-directories, saying that it is "IN USE".

In reality, a directory is actually a file, but one containing a list of all the files contained within it.

We can cut sections from a directory tree and move them elsewhere within the tree, or within another tree.

Try the following:

◇TC ; tree copy

Source is:

PROGRAMS/GEOFF

Destination is:

LETTERS

Now we have made a copy of part of the tree and grafted it onto another part of the tree.

Geoff Cooper, CCL

SOFTWARE REVIEW:

MUSIC SUITE'S Z88-ST LINK v1.2

by Ian Braby (0123)

I came across this program quite by accident on MicroLink and further investigation produced a review copy plus potential discounts to Z88 Users' Club members (see later!)

The software is available with a connecting cable, if required, but you can use the Z88 serial printer lead

with a suitable gender bender, so this expense can be avoided!

On booting up the program you are presented with a screen covered in icons - the software is purely mouse-driven, the only possible key-presses being an occasional <ENTER> or <HELP> - this latter acts as an ESCape (but why not use ESCape itself?).

The first thing to do, after connecting both machines, is to ensure they are speaking at the same speed. This is done through the  Setup menu on the Z88 and by a series of icons on the Atari. 9600 baud seems optimal, although 19200 is available! One minor complaint at this point: nowhere in the documentation (4 pages of A5, i.e. a folded A4 sheet!) does it tell you to set the Z88 XOn/XOff to "Yes". Failure to do so results in garbage during a long file transfer.

#### In Use:

Files are transferred using the Z88's  X Import-Export option. To send press "s" and then enter the filename. On the ST you click on "RECEIVE" and press <ENTER> (or click in the dialogue box) to confirm your choice. Pressing <ENTER> on the Z88 then starts the transfer indicated by a count on the Z88 and a red bar turning green on the ST (the only time it does so - why not when transmitting back?).

On completion of the transfer the Atari reports that it is formatting the received data into columns. This done, you must then "SAVE" this data to disk - in other words programs are not simply, and continually, dumped to disk. This has both a plus and a minus side.

On the plus side it means that, instead of saving the dump to disk you can, using the output options save the file in **lst Word**, ASCII or **Superbase** formats, depending on the source, and the columns can be separated by commas, TABS or spaces. To be honest, however, I could see no difference between the last two options and whilst I acknowledge that the writers make mention of the fact that the **lst Word** output is a little rudimentary, I found it to be nearly useless! Why? Well, apart from the first line, far from ignoring all printer codes, everything was shown as **LIGHT**, **ITALIC**, **UNDERLINED** in **lst Word**; headers and footers were lost, as was all tabulation!

The output options are quite comprehensive, however, allowing you to view the file on the screen or printer before saving it to disk. Columns can be shown giving 12 character spaces each across the screen or, using the **ACROSS+DOWN** option, in a manner similar to their origin or, finally, one item from each column can be shown as a group, downwards. Quite why, I'm not sure!

The worst aspect of the "RECEIVE" and "SAVE" process, however, is that it is slow and means that you cannot send a batch of files across. Sending files to the Z88 involves first loading, then transmitting them and, again, this means no batch file handling.

The final two methods of file output are "PRINTER INTERCEPT" and "PARALLEL PRINT". The former allows the ST to intercept printer information directly from the Z88. In other words, ◊PO a spreadsheet from the Z88 and all the values will be trapped, rather than all the formulae which give rise to them.

The second option - "PARALLEL PRINT" - redirects the serial input from the Z88 straight to the parallel port and to a printer. At least, that's the theory - but

some processing is obviously done because all my header and footer formatting was corrupted, although the overall page length was retained - don't know about that!!

Overall?

You may get the impression, at the end of the day, that I don't think very much of this piece of software! That's not strictly true, however. In it's major aims of archiving Z88 programs on the Atari it is successful and it can even cope with BASIC without corruption.

As far as some of the "bells and whistles" are concerned, however, then, no, I'm not tremendously impressed.

What I'd like to see sorted out first would be the "PARALLEL PRINT" option, as this seems a minor bug but a major irritation. Batch processing would be nice - despite my fairly harsh criticism in the past, I'm now increasingly using Sector Software's QZ Z88-QL software for that very reason - but is not quite so fundamental!

Secondly, I feel that the file output needs careful attention. Some difference should be detectable between TAB and SPACE formats, for a start. Having options to view columns either ACROSS, ACROSS+DOWN or DOWN is all very well, but I feel that this particular effort has been somewhat wasted and that more careful attention to 1st WORD, or even ASCII output should have been given.

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The program is available from:

The Music Suite Ltd  
Glanyrafon House  
Cenarth  
Newcastle Emlyn  
Dyfed SA38 9JN

Price to Z88 Users' Club members: Software £15  
Software & lead £25

Credit card (Visa/Access) orders accepted on:  
0239-710594

Please mention that you are a Club member or you'll get no discount! (The normal price for the software is £19.95!).

BOOK REVIEW : Z88 BBC BASIC MANUAL

by M. W. Hey (0703)

After a long, long wait the Z88 BASIC manual has arrived from M-Tec.

BBC BASIC is one of the best versions of BASIC, and has some powerful features that are not available in the versions which are found on other computers, and a good manual is vital if one is to get the best out of them.

Let me start by stating that I have never used BBC BASIC before, and I strongly feel the need for a full list of the features available and the exact syntax that the Z88 BASIC interpreter requires. My experience up to now is that when I first try to run my programs I get a series of incomprehensible error messages (none of which appear in the original Z88 User Guide) which I cannot correct. Now all this will change!

The new BBC BASIC manual consists of 400 A5 pages stuffed full of facts. One section devotes 168 pages to a list of the available statements and functions from ABS to WIDTH with the correct syntax; another devotes 18 pages to windows and VDU statements (information previously only available in the pages of Z88 Eprom); a 20 page introduction to machine code programming (full of dire warnings); and using the Z88 filing system, operating system interface and printing from within programs.

The style of the book is rather terse and dry in contrast with the rather chatty writing in some BASIC guides written for the BBC computer - it is not a book to read in the bath, unless you have a really avid interest in programming or are the sort of person who reads technical dictionaries for fun. However it is easy to find facts quickly due to the logical layout and absence of waffle.

My biggest disappointment was the small number of examples provided to illustrate the facts. There are quite a few blank pages scattered throughout the book, and these could have been collected together to provide space for a few more sample programs. I find that the best way to understand programming is to write programs, but the second best is to dissect those written by other people, and I would like to have seen a wider variety of listings with accompanying notes.

My final verdict? If you wish to write really brilliant programs for your Z88 then reach for your wallet. For £14.50 here are answers to questions that you didn't know you had to ask.

The BBCBASIC(Z80) Manual for the Z88 by D. J. Mounter is available direct from the publishers M-TEC Computer Services (UK), Market Place, Reepham, Norfolk, England. NR10 4JJ (Tel. 0603 870620) for £14.50 + £2.00 post and packing.



# For the Z88

**B**

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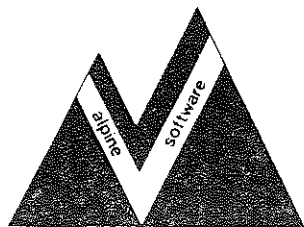
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|              | PC PipeDream   | Colton Software   | £114.00 |
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# PipeDream

PipeDream is now available for the IBM PC and compatibles, and the Acorn Archimedes. It has been completely rewritten for these computers and contains many new facilities, whilst retaining complete file and keyboard compatibility with the Z88.

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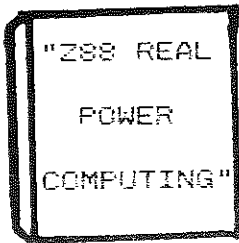
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## Z-Tape:

The Z88 cassette interface has now been on sale for a while. The response from users has so far been very good, and with over 100 copies sold in under a month, user reports are good.

The most common cause of user frustration appears to be clever cassette recorders with vicious automatic gain controls or low level amplification like Walkmans. However, to date we have had only one buyer who has retreated defeated.

In the single outstanding user query we are persuing all possibilities including possible Z88 hardware faults. As they say in all good detective novels, 'we are confident of an early arrest...'

Having said that, we have also enjoyed lots of unsolicited praise for Z-Tape. It is fulfilling its promise of an inexpensive effective backup tool.

## zBASE:

Anomalies - That's what Ashton-Tate call the bugs found in their software. Feb89 - CREATE - When creating a new file with a small structure of say 25 characters in total, doing an APPEND BLANK immediately after creation can cause garbage to be deposited in the first record. FIX. Immediately after the file is created do a USE to close the file, then re-open and start appending data.

Feb89 - LTRIM. Doesn't work properly and should not be used. A work around is possible using the SUBSTR() function but I would not recommend it to anyone.

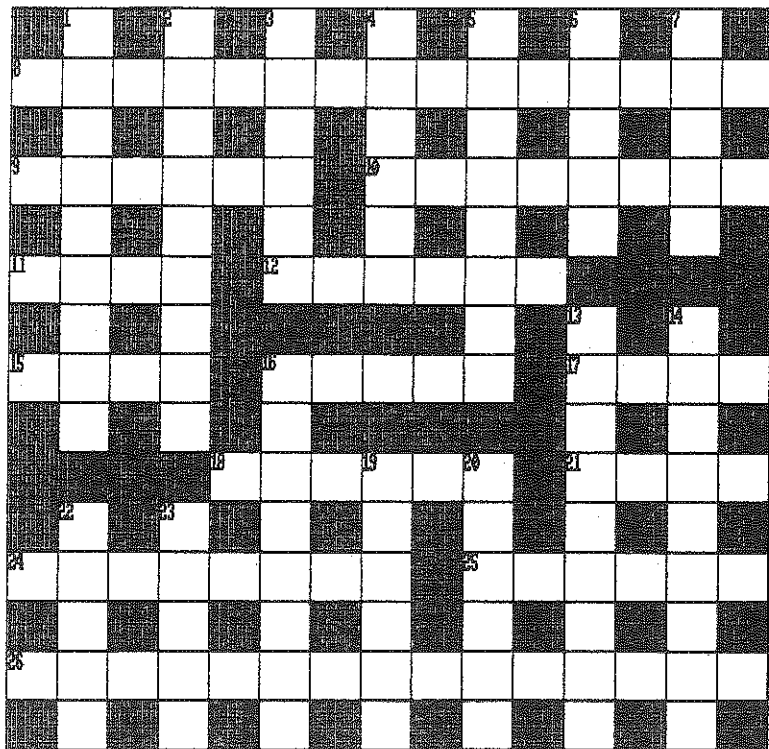
Feb89 - SET ECHO. This is not in the manual and should be. When testing a command file which is producing errors, insert this command on a line on its own. From that point onwards all commands and their results will be echoed to the screen. It will make a horrible mess of the screen but you will be able to pinpoint exactly where the bug is occuring. It is a toggle command i.e. SET ECHO a second time switches the echo off.

## Superchips

New Superchip III - zBASE, Z-Term and Z-Tape all on a single chip for £129 inc VAT.

P.S. When we asked the Users' Club members to phone and let us know the level of interest in a tape backup system, the response was greatly encouraging. When we actually launched the product the user club response level turned out to be a very good indicator of what was bought. Accordingly we should like to thank all members for their assistance. Since the club has proved to be such a good indicator of sales levels, we are once again asking you to call with your suggestions for Z88 software.

We shall be attending the April 1 workshop so any fans or critics, this is your opportunity to tell us what you think and give us your 'wish list' for more Z88 software. Those who can't be there, please phone.



THE  
**WORD**  
 1

by David Axford (1295)

ACROSS.

8. Use the DIAMOND key and R to do this. (6, 9) 9. Press this to reset your Z88. (6) 10. Makes a program run when first switched on. (8) 11. You may disable this using the Panel popdown. (4) 12. Sitting on this doesn't stop you using your Z88. (6) 15. Male deer. (4) 16. Use this as a secure method of keeping your files. (5) 17. Approve of. (4) 18. Half of a byte. (6) 21. Title that represents data. (4) 24. The text of an opera. (8) 25. Keyboard arrangement other than QWERTY. (6) 26. A Z88 bought during the sales! (3, 5, 7)

DOWN.

1. We create these using PIPEDREAM. (9) 2. Selecting [SQUARE] P from INDEX will give us this. (5, 4) 3. Foldaway foot \_\_\_\_\_ the Z88 at a comfortable angle. (6) 4. Memory cartridge containing no data could be said to be this. (6) 5. Having only this much paper, must order more! (4, 4) 6. Something offered to a person in trust to act dishonestly. (5) 7. Make of dot-matrix printer. (5) 13. Receive files from a bulletin board. (9) 14. A sunny position? (4, 5) 15. We do it when we modify a document. (4, 4) 19. Shattered. (6) 20. Will the Z88 be able to do this, we hope so! (6) 22. Nobody wants this, treat it like the plague! (5) 23. Display number relationships visually. (5)

ANSWERS IN THE MAY-JUNE 89 ISSUE.

Z88 EPROM STORAGE

by Mark Stevenson (0716)

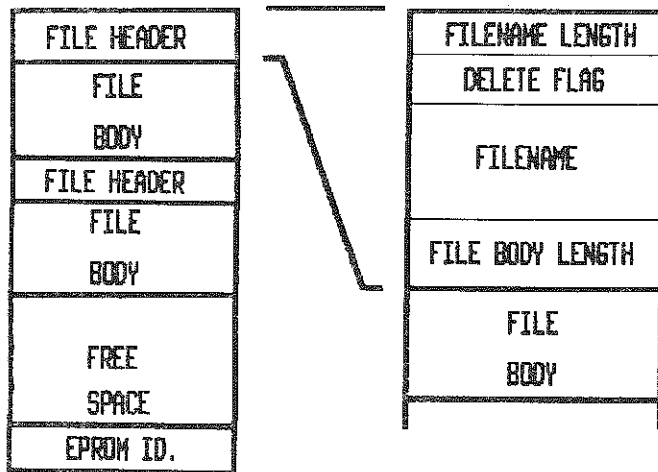
In my last article (in the Sept/Oct 1988 issue) I discussed how the memory paging system works on the Z88. If you have entered the program listing and started to experiment you may have tried looking at an EPROM card plugged into slot 3. In this article I will examine how the filing system organises data and files held in an EPROM and provide a BBC BASIC program that shows how much room is used up by saved files, and how much is still free.

An EPROM (or Electrically Programmable Read Only Memory, for those of you without an electronics background) initially contains every byte equal to &FF and the Z88 can 'blow' individual locations to any other value by applying a programming voltage to one of the chip's pins. These blown locations retain their new values until the EPROM is exposed to high-intensity ultra-violet light in an EPROM eraser. The UV light causes the cells to revert to the unblown &FF state. This type of memory, which does not lose its data even when not powered, is called non-volatile.

As I mentioned last time, memory pages &C0 to &FF are reserved for slot 3, so these are the ones we are interested in. These values would allow up to 1 megabyte of EPROM to be addressed. However, if the card is not this large it produces several repeated 'images' that fill the address space. Thus a 32k bytes EPROM (which contains 2 pages of 16k) will not only appear in pages &C0 and &C1, but also identical images in &C2 and &C3, and &C4 and &C5, etc, right up to &FE and &FF. This can be a useful side effect since we will be able to examine the top page of the EPROM by looking at page &FF, whatever size the actual chip is.



The operating system uses the top 64 bytes of the last page to hold details of the EPROM. The last two bytes contain a 'signature' ('OZ') which may be used to determine if an EPROM is fitted or we are attempting to read from an empty slot. The fourth byte down from the top gives the size of the EPROM. The value is the number of 16k pages the chip contains, so a 32k EPROM contains the value 02. These are the only values we need from the identification block. Now let us have a look at how files are stored.



The diagram shows how the EPROM is segmented when it contains files. Starting from the bottom of the EPROM (the top of the diagram) each file is stored in one contiguous block preceded by a 'header' containing the file name and details of the file length. As each new file is written to the EPROM it is tagged onto the end of the previous one. This continues until no more files can be fitted into the remaining space. Note that if you save a new version of a file to EPROM with the same name, the old file space is not re-used, and the new version is just added to the end of the existing list. The old

version is still resident in the EPROM but the operating system marks it as being deleted by blowing a byte in the old file header to 00. So don't believe that you have obliterated that sensitive information just by saving a new file with the same name, the old version is still there taking up space, and is readable with a little effort!

Sadly the 'Catalogue EPROM' function of the Filer does not indicate how much room has been used up, so I have written a BASIC program to provide this facility. The program is very straightforward in operation. It first checks that there is a valid signature at the top of the EPROM. If there is, the size of the chip is determined and then the program starts walking down the chain of file headers printing details of filename, size, and if it has been marked a deleted. The listing may be stopped and started again by pressing any key. When the program reaches the end of the chain, it calculates the space used, and free space still available, and prints these values. The program uses the same machine code routine as last time to read bytes from other pages of memory. The program should work on all sizes of EPROM card but I have only been able to test it on a 32k card.

Just as an aside I have recently purchased an EPROM card from Dixons which refused to take files and reported a 'File Type Mismatch' error. The EPROM was probably an early one judging by the label, and upon examination I discovered that it had an incorrect ID section. I erased the EPROM, the Z88 re-wrote the ID section, (it does this when you select 'Catalogue EPROM' in the Filer if the EPROM is totally blank) and then all was well. So if you have a problem using an EPROM card for the first time, then try erasing it before giving up and sending it back for repair.

(Mark's program listing is below. As with his previous program, some assembly language is used, so great care must be taken when entering and checking the listing. One mistake could cause a hard reset resulting in the loss of all of your precious files. If you don't feel confident to type in the listing yourself, by the time you read this Ian Braby will also have the program in the Library. - Roy)

```

10 REM JMS 29-9-88
20 DIM Z% 50
30 PROC_ASM
40 :
50 IF NOT FN ROMVALID PRINT "SLOT 3 DOES NOT CONTAIN
AN EPROM": END
60 S%=FN RDBYTE(&FFFC,&FF)
70 PRINT "EPROM SIZE - ";S%;" PAGES (";S%*16384;"
BYTES)""
80 CADDR=&C000 : CBANK=&C0 : FTOT=0
90 REPEAT
100 BLNK=FN TSTFILE
110 IF NOT BLNK PROC FILEPRNT
120 Z%=INKEY(0) : IF Z%<>-1 Z%=GET
130 UNTIL BLNK
140 PROC_STATS
150 END
160 :
170 DEFPROC_ASM
180 FOR X=0 TO 2 STEP 2
190 P%=Z%
200 [
210 OPT X
220 .ROMBYTE
230 LD A,(&4D3) : PUSH AF
240 LD A,C : LD (&4D3),A : OUT (&D3),A
250 LD A,(HL) : LD L,A
260 POP AF : LD (&4D3),A : OUT (&D3),A
270 RET

```

```

280 ]
290 NEXT
300 ENDPROC
310 :
320 DEFFN RDBYTE (ADDR,BANK)
330 C%=BANK : H%=ADDR DIV 256 : L%=ADDR MOD 256
340 =(USR(ROMBYTE) AND &FF0000) DIV &10000
350 :
360 DEFFN ROMVALID
370 = (FN RDBYTE (&FFFF,&FF)=&7A) AND
(FN RDBYTE (&FFFE,&FF)=&6F)
380 :
390 DEFFN TSTFILE
400 Q%=FN RDBYTE (CADDR,CBANK)
410 = (Q%=&FF)
420 :
430 DEFPROC FILEPRNT
440 FTOT=FTOT+1 : PROC INCADDR(1)
450 IF FN RDBYTE (CADDR,CBANK)=0 THEN DFLG= TRUE ELSE
DFLG= FALSE
460 PROC INCADDR(1) : PRINT " /";
470 FOR W%=1 TO Q%-1 : PRINT CHR$(FN RDBYTE (CADDR,
CBANK)); : PROC INCADDR(1) : NEXT
480 E%=0 : FOR W%=0 TO 3
490 E%=E%+FN RDBYTE (CADDR,CBANK)*(256^W%) :
PROC INCADDR(1) : NEXT
500 PRINT TAB(35),E%;
510 IF DFLG PRINT " **DELETED**" ELSE PRINT
520 PROC INCADDR(E%)
530 ENDPROC
540 :
550 DEFPROC INCADDR(T%)
560 CADDR=CADDR+T%
570 IF CADDR > &FFFF THEN CADDR=CADDR -&4000 :
CBANK=CBANK+1
580 ENDPROC
590 :
600 DEFPROC STATS

```

```
610 U%=(CBANK-&C0)*16384 + CADDR-&C000 +64
620 V%=S%*16384
630 PRINT "NUMBER OF FILES : " FTOT
640 PRINT "SPACE USED      : " U%
650 PRINT "SPACE FREE     : " V%-U%
660 ENDPROC
```

SOFTWARE REVIEW:

Z-TAPE CASSETTE BACK-UP PACKAGE.

by M. W. Hey (0703)

A deafening crash from the front porch heralded the arrival of my eagerly awaited Z-TAPE from Wordmongers, and I unwrapped the package thrilling with eager anticipation. I am a firm believer that all computer data and programs should be backed up regularly, but I am ashamed to admit that I rarely put my conviction into practice. That was until the arrival of Z-TAPE!

So, how did it shape-up? Well, for those of you who have put off buying Z-TAPE until you have read the review, I have some good news and some bad news. The good news is that the software is excellent; the bad news is that you have to use a tape recorder to make it work!

If I were to award points to tape recording as a software storage medium it would get about two marks out of 10. My recorder is slow and unreliable, cumbersome and un-cooperative; but it is CHEAP! You can fit about 40k on one side of a C15 cassette (69 pence) as against 32k on an EPROM (£20). At that kind of saving I am prepared to persevere.

On unwrapping the parcel I found one 32k ROM, a cable to connect the Z88's RS232 socket to a tape-recorder (which must have mini jack sockets for microphone and earphone), a set of instructions and a copy of Wordmongers' Licensing Agreement. The instructions are clearly written giving a brief outline of the operating sequence and also a more detailed explanation of the facilities available.

I inserted the ROM in my Z88, and selected J. The display which appeared was very similar to the Filer, and that is what makes Z-TAPE so easy to use: from the beginning it feels quite familiar.

Z-TAPE is designed to back-up groups of files, and these files are saved as a series of blocks, with a catalogue at block 0, so that the contents of the tape can be checked easily (each file is shown with its size and its last updated time and date). After saving files you are well advised to verify them, to check that the saving process has been 100% successful.

While Z-TAPE is saving, loading or verifying files the Z88's display follows the progress of the process showing how many files and blocks remain to be processed. This helps to while away the time and avoids the process becoming too tedious. I have found that the best way to use Z-TAPE is to start loading or saving files, then get on with something else leaving the Z88 and tape recorder to get on with it, whilst keeping one ear open for the double bleep which signifies an error condition.

What sort of tape recorder is best to use? Wordmongers say that most mono machines which run off 6 volts-worth of batteries should work (little Walkman-types are often not powerful enough for the Z88 to read), and to their credit they offer your money back if you return Z-TAPE promptly because you find it is not compatible with your recorder.

Files which I require often (like my list of addresses) are most conveniently stored on EPROM, and ones which I am only keeping for reference are stored on tape.

I had persistent problems due to the recording-level control of my tape-recorder. To record block 0 (the catalogue) I had to talk into the microphone to set the level, and slip the input jack in just before block 0 was saved. I rang Wordmongers and spoke to Tony Kaye, who said "Software is supposed to make life easier, not more complicated!" and offered an upgrade which was designed to solve the problem.

Z-TAPE has the powerful facility to load machine-code programs and run them without having to go through BASIC. This should allow the distribution of cheap software on tape, and no doubt much more about this will appear in future editions of "Z88 Eprom".

Z-TAPE cost me £50, and I now back up all my files twice a week, at minimal cost. I have been able to erase a full EPROM (while the important files that had been stored on it were held on tape) and then replace them on the EPROM (with 75k of free space remaining!) so Z-TAPE has paid for itself already.

Z-Tape costs £50 including VAT, and is available from Wordmongers Ltd., 21 Edison Road, Rabans Lane, Aylesbury, Bucks HP19 3TE. Telephone 0296 437878.

(As I was also in the process of writing a review of Z-Tape when Michael offered his, I thought I might as well add one or two points to the above.

I tried Z-Tape with six different tape recorders - a Panasonic stereo model, a Ferguson computer compatible, a Sony mono recording Walkman, an old Fidelity mono, a Sanyo mono and finally a Morphy Richards computer

compatible. Bearing out what Michael suggests, the Panasonic stereo and the Walkman would not work reliably - if possible stick to a mono machine with four batteries. The Walkman could be used to save data, but the tape needed to be loaded back using one of the other machines. The only machine which failed completely is the old Fidelity, which I put down to age.

The main requirement for your tape recorder is then mono, with at least four batteries. It must have mini-jacks for Microphone input and earphone output. My experience shows that price is not really a factor - if you buy a machine of reasonable quality, spending £15 to £25 would seem to be adequate. You should generally try to use the recorder mains powered rather than from batteries.

Z-Tape is so similar in appearance to the Filer that once I found myself in Z-Tape trying to erase files with  $\diamond$ ER, as though I was actually in the Filer!

To sum up, Wordmongers software seems to get better and better with each product they release. How about a disk drive system, gentlemen? - Roy)

#### Software Library Update

This time sees a rash of new programs in the Library, including artificial intelligence (Doctor Feelgood by Mike Smith (1103)), a game (Code Breaker by George Whitson (1321)) a load of bits and pieces gratefully received from Aware Technology plus, as a late entrant, Z88fax by Simon Berry (0828).

On this last program I feel I must say a few words (almost by way of review - but, as it's free, why not get a copy and review it yourself?). Simon, in his letter, told us that a version of this has been carefully considered by Wordmongers for future inclusion on a Superchip, with a few extra "bells and whistles" added - it's that good!



If you own a FILOFAX and have some FILOFAX computer stationery then this program is for YOU! It will happily print out your Z88 Diary entries into FILOFAX diary format (2 pages to a week Monday-Friday) or, with a blank source file, print out a diary for you, saving you this expense until 2027!

The program can also output your address file in a similar format, with fresh pages for each letter of the alphabet.

It really is a well-written program and more of this standard can do the Z88 no harm whatsoever.

Keep the programs coming in, and please remember to always send a return label and postage no matter whether you're contributing or borrowing!

That's all for now!!

Ian

The new programs:

- Z039 DOCTOR FEELGOOD - a variation on the ELIZA program by Mike Smith (1103) (22.5k total).  
A=documentation  
B=program
- Z040 CODE BREAKER - by George Whiston (1321) (12k total). An excellent rendition of Mastermind in BASIC.  
A=program  
B=documentation
- Z041-6 Six programs from Aware Technology

Z88 EPROM - MAR-APR 1989

- Z041 MORPH.BAS (6k total) - metamorphose one shape into another !! Requires BASIC Patch and comes with two picture files.  
A=documentation  
B=program  
C=Reagan demo }rename with  
D=Thatcher demo}.pic extension
- Z042 PLOTFX.BAS (2.5k) - General function plotter. Requires BASIC Patch.  
A=documentation  
B=program
- Z043 COMPARE.BAS (1.5k) - Compares two files byte by byte and writes any differences to a PipeDream-compatible file called COMPARE.RES
- Z044 HEXDUMP.BAS (2k total) - dumps the contents of a file to the screen in both ASCII and hexadecimal format and with the ability of moving back and forth through the dump.  
A=documentation  
B=program
- Z045 FNBASES.BAS (1k) - a function you can bolt on to your own program to convert numbers to any base from 2 to 16. REMarks give full details of it's use.
- Z046 FNINTEGRAL.BAS (1k) - a function to calculate functions of X which can be added to your own programs. REMarks again give details of it's use.
- Z047 Z88fax - a suite of four programs by Simon Berry (0828) which will print out Z88 Diary entries onto filofax stationery (no need ever to buy another diary for your personal

organiser!, and do the same with a PipeDream address database. With full instructions. (17.5k total)

A=documentation

B=CLI file to start the ball rolling

C=Z88fax - controlling menu program \*

D=Z88add - address printer \*

E=Z88diary \*

\* Rename these files as shown

### 5-CELL Ni-Cd BATTERY HOLDERS

Due to the pressure of work involved in running the Club, I'm afraid the offer to supply the 5-cell battery holders (for use in powering the Z88 from rechargeable batteries) in Vol 2 No 1 must now be withdrawn. Making one of these is actually quite simple, and below I give the details for anyone wanting to try. My apologies to those people who have ordered battery holders from the Club and have then had to wait a long time for a reply.

I would reiterate what I have said previously about the use of rechargeable batteries - never use them inside the Z88, as there is always the danger of data loss because the Ni-Cd batteries 'die' very quickly. I always suggest using normal alkaline cells inside the machine, and rechargeables in an external pack.

#### **Components Required:**

1 off 9v battery holder (p.74 no.HQ01B)

1 off PP3 battery clip (p.73 no.HF28F)

1 off dummy battery (p.73 no.YX92A)

1 off long power plug 2.1mm (p.169 no.HH61R)

The numbers after each item refer to the Maplin order code and page number. Maplin are a reliable source of components and their catalogue is available from WH Smith. Total cost of the components, including postage, should be around £2.00.

When you have the components you need to solder the power plug to the wires on the PP3 battery clip. Solder the red (positive) wire to the centre pole on the plug, and the black (negative) wire to the plug's outer pole. You must be **very** careful while soldering these wires not to short circuit the two. Shorting out Ni-Cd cells can be extremely dangerous - the cells can explode, so if you have a multimeter or continuity tester, be sure to check the connections.

Install the dummy cell into any of the six cell positions and fill the other five positions with your Ni-Cd cells. Then simply clip the PP3 battery clip/wire onto the battery pack.

With five cells you should find that the Ni-Cds give you 8 or more hours of computing from a fully charged set of batteries.

SMALL ADS AND SWAPSHOP

Not many this time!

**\*\*FOR SALE\*\***

2 x 32k EPROMS FOR Z88; £11 EACH OR £20 FOR THE TWO INC. POSTAGE. RING TERRY ON (0502) 715989.

**\*\*WANTED\*\***

FOR PRIVATE COLLECTION - ANY OLD SINCLAIR PRODUCTS UP TO ZX80. POCKET RADIOS, CALCULATORS, BLACK WATCH ETC. WRITE TO ROY AT THE CLUB ADDRESS ON PAGE 2.

Queries, Hints and Tips has been omitted this time due to lack of space - back next issue.

**NEXT ISSUE OUT SOMETIME IN MAY !!**

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**ALL TRADEMARKS ACKNOWLEDGED**